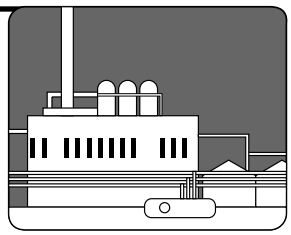


Chapter 3

TRI in Perspective

As the TRI program enters its tenth reporting year, the program has achieved enormous results. The public now has a much better picture of toxic chemical risks in their communities, while industry and government have better data for identifying opportunities and measuring successes in preventing pollution. This chapter presents an overview of recent and proposed expansions to the TRI. These expansions allow the TRI to provide even more valuable information to the general public and industry. The end of the chapter provides examples that illustrate the value of the TRI program, and includes the results of EPA's 33/50 Program.

TRI EXPANSION

There are few who would disagree that the 1987 Emergency Planning and Community Right-to-Know Act (EPCRA) provisions have proven to be among the most successful stimuli for reducing the amount of toxic chemicals that enter the environment. With specific reference to the TRI, this program has focused public and industry attention on the billions of pounds of toxic materials that are released directly into our air, our land and our water, are also injected underground, sent to landfills, or are recycled, burned for energy recovery or otherwise treated. While all releases and transfers are not equal, and some may not lend themselves to reduction or elimination, the TRI has forced a hard look at our approach to the use of toxic chemicals. This hard look has been beneficial. Between 1988, the accepted baseline year for TRI, and 1995, industrial on-site releases have decreased by 45.6%, from 2.96 billion pounds to 1.61 billion pounds (see Chapter 5 for additional information). This reduction reflects the hard work of manufacturing facilities in SIC codes 20-39—facilities that have refined their processes, looked for source reduction opportunities, assured outstanding housekeeping practices and worked to minimize the footprint they leave on their surrounding environment. The TRI, designed to be non-intrusive, has provided the guide for all to use when seeking areas for environmental improvement.

One valid criticism of the program has been the limited breadth and depth of the chemical, facility and data coverage. In 1987, when the Congress passed EPCRA, 300-plus chemicals and chemical categories were presented as the "TRI Chemical List." This list was a combination of two existing chemical lists, the New

Jersey Environmental Hazardous Substance List and the Maryland Chemical Inventory Report List. Over time, through the EPA's petition process this original list has been modified as the Agency responded to petitions to add and delete chemicals, given the listing criteria. These criteria focus on both acute and chronic health effects as well as environmental effects. SIC codes 20-39 are the manufacturing sectors, which must report under EPCRA section 313. Data coverage was confined to information on releases and transfers.

Over time, EPA has worked to expand that coverage to other industrial sectors and other chemicals that have similar adverse impacts on our environment. Towards that end, the Agency has aggressively pursued an expansion strategy that would enlarge the boundaries of TRI in many directions. EPA has pursued a three-phase approach to broaden the scope of TRI. These phases include chemical expansion, facility expansion, and chemical use reporting. EPA recently proposed actions has transformed the TRI program and improved the public's access to information on chemicals in their communities. These changes include a significant expansion of the number of chemicals in the program to give the public a more complete picture of all the toxic chemicals in their communities and changes to improve the functionality of the program such as alternate reporting requirements for facilities with lower levels of reportable amounts.

The remainder of this chapter provides more detailed information on the following changes/ expansions to the TRI program. Specifically, this chapter explores the following:

- Phase 1 - Chemical Expansion
- Phase 2 - Facility Expansion
- Phase 3 - Chemical Use Reporting
- Future TRI Modifications
- The 33/50 Program
- International Aspects of TRI

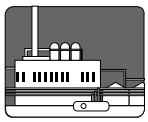
Phase 1: Chemical Expansion

The Phase 1 Expansion included two major actions. The first occurred in 1993 with the addition of certain RCRA chemicals and certain hydrochlorofluorocarbons (HCFCs) to EPCRA section 313.

The second action of this phase was the expansion of the TRI by adding 286 chemicals and chemical categories on November 30, 1994 (59 FR 61432).[1] These 286 additional chemicals can be characterized as high or moderately high in terms of their toxicity and are currently manufactured, processed or used in the United States. This expansion of the chemical list raised the number of chemicals and chemical categories to over 600. Because these new chemicals and chemical categories became effective beginning with reporting year 1995, this Public Data Release is significantly impacted by these additions. Specifically, the rule added over 150 pesticides, certain Clean Air Act chemicals, certain Clean Water Act Priority Pollutants, and certain Safe Drinking Water Act chemicals. Many of the chemicals are carcinogens, reproductive toxicants, or developmental toxicants. Of particular note are the addition of industrial chemicals such as diissocyanates, n-hexane, n-methylpyrrolodone, and chemicals such as polycyclic aromatic compounds that result from the combustion of fuels.

While the addition of the close to 300 chemicals and chemical categories was a major component of the chemical expansion, the TRI chemical list is always fluid and dynamic. EPA continues to review other chemicals for addition, including

[1] Of the 286 chemicals, 20 were diisocyanates and 19 were polyaromatic compounds. These are reported not as individual chemicals, but as 2 chemical compounds. Furthermore, 3 other chemicals have been remanded, and one chemical was not reportable for 1995 because of an administrative stay. Therefore, the number of reportable chemicals added to the TRI in 1995 was 245.



chemicals proposed for addition that were not listed because of the lack of available data as well as other chemicals, for example, persistent bioaccumulators. In addition, through the petition process, EPA may add or delete a number of chemicals each year. Chemicals may be added or deleted according to the toxicity criteria outlined in sections 313(c) and (d) of EPCRA.

In an effort to minimize the impact of reporting requirements, EPA has streamlined the reporting requirements for facilities with low-level releases of listed toxic chemicals. Beginning in 1995, facilities that have annual reportable amounts of a listed toxic chemical that do not exceed 500 pounds can apply a higher activity threshold in determining their reporting obligations. The annual reportable amount is defined as the total of all releases to the environment and other generated wastes containing the listed toxic chemical. If the facility does not manufacture or process or otherwise use over one million pounds of the listed chemical, the facility can use an alternative, less burdensome reporting option. Instead of filing the complete Form R detailing all its releases and waste management activities, the facility can file a much shorter certification statement form (Form A).

Phase 2: Facility Expansion

Since the enactment of EPCRA, the TRI program has been focused on the releases and other waste management activities of the manufacturing sector -- facilities classified as being primarily in the SIC codes 20-39. To provide the public with a more complete picture of the toxics in their community, EPA undertook a detailed examination of other, non-manufacturing industries to determine which of the industries may be significant generators of toxic chemical releases and wastes.

A number of factors were used to evaluate which industries would be considered for this expansion, including other available data on toxic chemical releases, the inter-relationship of non-manufacturing operations to manufacturing operations, the degree to which reporting would be expected to occur and the potential burden that TRI reporting might impose on these facilities. In 1996, EPA proposed adding industries that provide energy or raw materials to the manufacturing sector (e.g., mining) and those that receive or take away material from the manufacturing sector (e.g., petroleum bulk terminals and stations). Among the sectors being considered under this expansion are the following:

- Metal Mining (SIC code 10 except for SIC codes 1011, 1081, and 1094);
- Coal Mining (SIC code 12 except for extraction activities);
- Electrical utilities that combust coal and/or oil (SIC codes 4931 and 4939);
- Resource Conversation and Recovery Act (RCRA) Subtitle C hazardous waste treatment and disposal facilities (SIC code 4953);
- Chemicals and allied products wholesale distributors (SIC code 5169);
- Petroleum bulk stations and terminals (SIC code 5171); and
- Solvent recovery services (SIC code 7389).

As part of this rule, EPA revised the definition of otherwise use to clarify that the treatment for destruction, stabilization, and disposal of wastes received from other facilities is a reportable use. EPA estimates that over 6,100 additional facilities will submit over 37,000 additional Form R reports because of the addition of these industry groups. EPA will continue to review other industries for possible inclusion in the TRI program.

EPA is requiring facilities newly subject to the TRI requirements to report on activities for the remaining portion of 1997, with reports due by July 1, 1998. EPA is also planning an aggressive outreach campaign, including guidance, training, and technical assistance, to assist these newly added facilities in understanding their reporting obligations.

> "I am committed to the effective implementation of this law [EPCRA] because Community Right-to-Know protections provide a basic informational tool to encourage informed community-based environmental decision making and provide a strong incentive for businesses to find their own ways of preventing pollution."
>
> — President Bill Clinton

Phase 3: Chemical Use Reporting

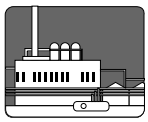
Because of its accessibility, TRI serves as the public's primary source of environmental information on a local, regional, and national level. EPA believes that chemical use information could expand the public's ability to evaluate a range of important environmental issues at all these levels.

EPA has been actively exploring the nature, scope, and issues involved in requiring the collection of this information. Following several public meetings, extensive public dialogue, and the publication of several issue papers, EPA issued an Advance Notice of Proposed Rulemaking (ANPR). The purpose of the ANPR was: 1) to describe the Agency's plan to further evaluate these issues; 2) to provide preliminary notice of additional public meetings; 3) to request comments and information on issues where additional assessment is needed; 4) to solicit actual assessments that have been performed using materials use data; and 5) to initiate public input concerning the development of regulation on this issue. EPA's Phase 3 expansion to assess the utility of materials accounting data is commonly referred to as "chemical use expansion."

The importance of this initiative was illustrated in August 1995, when President Clinton, in a memorandum to the EPA Administrator, directed EPA to expedite TRI expansion. The memorandum directed EPA to develop "an expedited, open, and transparent process for consideration of reporting under EPCRA on information on the use of toxic chemicals at facilities, including information on mass balance, materials accounting, or other chemical use data."

The materials accounting information that EPA is considering focuses on the complete life cycle of chemicals used by subject facilities, including amounts of listed chemicals entering a facility, amounts transferred off-site in products or as wastes, amounts consumed in processing activities, and amounts released on site to all environmental media. EPA believes that chemical use data could provide communities and government with information to better evaluate facilities' source reduction and pollution prevention performance; focus emergency planning efforts related to the transportation of chemicals through their communities and the storage of chemicals within their communities; identify amounts of toxic chemicals in products distributed in commerce; and address worker safety and health issues.

In the course of EPA's public dialogue on chemical use expansion, the Agency has identified several significant issues which will require extensive review. These issues include defining the premise and utility of chemical use information; impacts on confidential business information; potential burdens on the regulated community; the relationship to Agency-wide environmental reporting priorities; and technical data collection and interpretive issues.



With the close of the comment period on February 28, 1997, EPA has begun reviewing the comments received. EPA expects to complete its evaluation of the comments and the issues identified in the coming year.

Future TRI Modifications

Pollution Prevention Act Reporting

Under the Pollution Prevention Act of 1990 (PPA), EPA is required to collect information on source reduction and recycling activities on the EPCRA section 313 reporting Form R. In September 1991, EPA changed the TRI to require that all facilities subject to reporting under section 313 provide the following:

- the quantity of the chemical (prior to recycling, treatment, or disposal) entering any waste stream or released to the environment;
- the quantities of the chemical recycled at the facility and elsewhere;
- the quantities of the chemical treated at the facility and elsewhere;
- information on source reduction activities and the methods used to identify those activities;
- the quantities of the chemical released in one-time events not associated with production processes;
- the quantities of the chemical expected to enter any waste stream or be recycled in future years; and
- a production ratio or activity index for the reported chemical.

This change in the program generated many comments (e.g., definitions of waste stream, reportable recycling, and in-process recycling) from industry, environmental groups, and the public. Therefore, EPA sought to develop a consensus approach through a special subcommittee of the National Advisory Committee on Environmental Protection and Technology (NACEPT) which is composed of industry, environmental groups and governmental agencies.

As a result of those discussions, the Agency is currently developing a schedule for publishing a supplemental notice of proposed rulemaking (SNPR) and final rule.

Form R Redesign

Since 1987, EPA has used the Form R to collect the facility specific information required by TRI. The form has undergone a number of changes over the years, most especially in 1990 when the form was redesigned to capture the data required by the PPA. Each year, EPA distributes the Form R to all facilities that reported in the previous year and supplies both paper and electronic versions of the format.

Beginning in 1997, EPA will be initiating an assessment of the current Form R and will be redesigning the form to accommodate a number of concerns which have arisen over time. As a first step, the form for collecting 1996 data will provide the opportunity to distinguish between Class I underground injection wells and all other types of injection wells. It will also provide a separate category for RCRA Subtitle C landfills as distinguished from all other landfills. In addition, the title of Section 5 of the Form R, previously named "Releases of the Toxic Chemical to the Environment On-Site" will be changed to "Quantities of the Toxic Chemical Entering Each Environmental Medium."

Beyond the changes which EPA will make on the 1996 form, the Agency will be working with industry, states, academia and other non-governmental organizations to identify other modifications to the form to make it a more

effective tool for communicating information about releases and transfers of chemicals to the public. Issues that will be addressed include changes to section 8 currently named "Source Reduction and Recycling Activities," to better reflect pounds of waste generated as distinguished from pounds of waste managed, changes to the nomenclature for underground injection and land disposal as well as modifications that may result from finalization of the PPA reporting requirements for Form R. EPA hopes to have a newly revised and complete form for the 1997 reporting year.

Persistent Bioaccumulators

EPA is considering adding some toxic persistent bioaccumulators to TRI. EPA is also exploring how to get information on extremely toxic persistent bioaccumulators to the public through TRI, possibly by reducing the reporting threshold for these chemicals. EPA is considering lowering the thresholds because releases of TRI chemicals that are toxic persistent bioaccumulators may not be reported because the chemicals may be manufactured below the reporting thresholds and because small release amounts may build up in the environment.

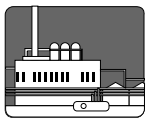
Toxic persistent bioaccumulators are chemicals that are stable in the environment for long periods of time (sometimes many years), build up in the environment, particularly in food chains, and are toxic to humans and/or animals and plants. Examples of toxic persistent bioaccumulators include: high-volume industrial chemicals, such as hexachlorobenzene, which is used to manufacture other chemicals; currently produced pesticides, such as lindane; metals, such as lead and mercury compounds; and byproducts of industrial processes or products of combustion during waste destruction or energy generation, such as benzo(a)anthracene.

Some toxic persistent bioaccumulators listed on the Toxics Release Inventory

Chemical	Source/Use
Chlordane	Pesticide; no longer in use in the U.S.
Benzo(a)anthracene	Burning of coal, oil
Mercury compounds	Many industrial uses
Lindane	Pesticide; currently in use in the U.S.
PCBs	No longer in production, but still found in electrical equipment

Some toxic persistent bioaccumulators are pesticides and industrial chemicals no longer in production in the United States but still present in the environment. Chlordane and polychlorinated biphenyls (PCBs) are good examples of such chemicals. Even though those chemicals are no longer in production, releases are reported to EPA and appear on TRI. The chemicals appear on TRI because they are being treated or disposed of by chemical manufacturers, federal facilities, or other industrial sources that made or used the now-discontinued chemicals. Reporting of releases of toxic persistent bioaccumulators no longer in production may increase once the facility expansion rule is finalized, since hazardous waste facilities are one of the industries that will have to report to the TRI.

EPA is considering adding other toxic persistent bioaccumulators to TRI. EPA is also exploring how to get information on extremely toxic persistent bioaccumulators to the public through TRI, possibly by reducing the reporting threshold for these chemicals. EPA is considering lowering the thresholds because releases of TRI chemicals that are toxic persistent bioaccumulators may not be reported because the chemicals may be manufactured below the reporting thresholds and because small release amounts may build up in the environment.



Hazard Assessments

One issue that arose out of the review of chemicals for addition to the TRI list of reportable chemicals was the need to conduct a hazard assessment of the existing chemicals to determine if these substances meet the toxicity criteria. The original listed chemicals were mandated by Congress and received no scientific review by EPA before being placed in the TRI. Currently, EPA is conducting a detailed hazard assessment of these existing chemicals to determine whether these chemicals meet the toxicity criteria for listing as specified in the statute. Following this detailed review, the Agency may take action to remove or modify the listings of those chemicals that do not meet the toxicity criteria.

33/50 PROGRAM

EPA established the 33/50 Program in 1991. This program was EPA's first voluntary initiative aimed at reducing the releases and transfers of toxic chemicals. The name is derived from the program's two numeric goals: a 33% reduction by 1992 and a 50% reduction by 1995. The baseline year was 1988. But the 33/50 Program was not just about decreases in releases and transfers. Equally important was how industry would achieve those reductions. EPA wanted to use the 33/50 Program as a vehicle for moving toward a greater reliance on pollution prevention, rather than the traditional end-of-pipe control methods. Through a voluntary approach, EPA also intended to build on the growing dialogue and cooperation with industry on environmental matters.

From the list of TRI chemicals, EPA selected 17 chemicals for the 33/50 Program. EPA selected these substances as priority chemicals based on their relative toxicity, volumes of use, and the potential for pollution prevention opportunities.

17 Chemicals Selected for the 33/50 Program

Benzene	Methyl ethyl ketone
Cadmium and compounds	Methyl isobutyl ketone
Carbon tetrachloride	Nickel and compounds
Chloroform	Tetrachloroethylene
Chromium and compounds	Toluene
Cyanide compounds	1,1,1-Trichloroethane
Dichloromethane	Trichloroethylene
Lead and compounds	Xylenes
Mercury and compounds	

The availability of the 1995 TRI data provides the final year of data for the 33/50 Program. The results have been positive. Almost 1,300 companies, representing over 6,000 facilities, participated in the 33/50 Program. The 1992 goal to reduce releases and transfers by 33% was met one year early with 1991 data. Likewise, the 1995 goal of 50% was achieved with 1994 data, also a year ahead of schedule. The final tally was a reduction of 55.6% from 1988 to 1995 for the 17 chemicals.

An EPA-sponsored study revealed some impressive distinctions between 33/50 participants and other companies reporting to TRI. For instance, in the study population, 58% of the reductions in releases and transfers of 33/50 chemicals was due to pollution prevention (source reduction), while the corresponding figure for other TRI chemicals was only 5%. For the first time, the study distinguished "real" reductions from changes in accounting methods—only 2% of 33/50 reductions was due to "paper" changes. The results of this study will soon be published in peer-reviewed journals.

The success of this program has shown how EPA and industry can work positively in a cooperative fashion. EPA is evaluating the results and lessons learned from the 33/50 Program. Discussions are underway to determine the benefits of additional voluntary programs that would encourage pollution prevention activities and reduce releases and transfers.

INTERNATIONAL ASPECTS OF TRI

Toxic chemical releases know no boundaries. While TRI data provide a wealth of information about releases and transfers of toxic chemicals within the United States, information on releases and transfers coming from other countries is limited. This, however, is changing. There are an increasing number of countries developing TRI-like systems. The international term for these systems is Pollutant Release and Transfer Registers (PRTRs).

The real stimulus for PRTRs was the 1992 United Nations conference on the environment, popularly known as the Earth Summit. One of the conclusions from this conference was the benefit of PRTRs. Countries were encouraged to develop these systems. In an important step, the Earth Summit also linked these PRTR systems with public right to know, an integral aspect of TRI.

From 1992 to the present, there has been a growing interest in PRTRs. The Organization for Economic Co-operation and Development (OECD), an organization of the industrialized democracies, decided to create a guidance document for governments on PRTRs. The development of this guidance manual included the participation of representatives from government, industry and other non-governmental organizations. The speed and success of the guidance document spurred the OECD environment ministers to issue a Council Recommendation which encouraged all OECD nations to establish PRTR systems.

For industrializing nations, the United Nations Institute for Training and Research (UNITAR) has developed a step by step process, with accompanying guidance manuals, on how to implement a PRTR system. In an initial phase, UNITAR selected three countries to serve in a pilot program (Mexico, Czech Republic, Egypt). Building on the lessons learned from this pilot project, UNITAR will work with additional industrializing nations. Among the nations which have expressed an interest are Vietnam, South Africa and Hungary.

There presently are six nations with PRTR systems (Canada, France, Netherlands, Norway, United Kingdom, United States). Many more nations are in various stages of establishing a system (Australia, Czech Republic, Denmark, European Union, Finland, Japan, Mexico, Sweden, Switzerland). With the Earth Summit, the OECD and other international organizations stressing the importance and value of PRTR systems, still more nations are considering taking similar steps.

North America offers the first opportunity to collect PRTR data on a continental scale. Both the United States and Canada have PRTR systems. Mexico conducted a pilot study in 1996 and expects to have its first complete PRTR data in 1999. As a first step, EPA produced a document which compiles PRTR data along the U.S.-Canada border and on the U.S. side of the U.S-Mexico border. Environment Canada, working with EPA's Region 5, developed a report on PRTR data around the Great Lakes. Building on this work is the Commission on Environmental Cooperation (CEC), the organization created by the environmental side agreements to the North American Free Trade Agreement (NAFTA). The CEC is responsible for the development of two important reports. The first (just recently completed) compares the PRTR systems in the three NAFTA nations. The second compiles data from the U.S. and Canadian PRTRs for 1994 and reports on Mexico's completed pilot study.

The United States will continue to work closely with the other countries and international organizations working on PRTR issues. The expanding work on PRTRs will require the enduring commitment and guidance of the United States and rely on the growing experience of the TRI.